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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/609,004	06/27/2003	Ming H. Wu	MEM-0005	8425
23413	7590	11/28/2006		
CANTOR COLBURN, LLP 55 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002			EXAMINER MORILLO, JANELLE COMBS	
			ART UNIT	PAPER NUMBER
			1742	

DATE MAILED: 11/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/609,004	<b>Applicant(s)</b> WU, MING H.	
	<b>Examiner</b> Janelle Combs-Morillo	<b>Art Unit</b> 1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 13 September 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-53 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-53 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>030306</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on September 13, 2006 has been entered.

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3-15, 22-24, 26-28, 32-35, 37-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schetky et al (US 6,258,182).

Schetky teaches a beta phase titanium alloy preferably comprising: 10-12% Mo, 2.8-4% Al, 0-2% Cr, and 0-4% Nb (see abstract). While the preferred range taught by Schetky does not overlap the alloys of amended claim 1, or claims 26 and 37, the alloys of claims 1, 26, and 37 fall within the scope of the limits of Mo, Al, Cr, V, and Nb listed in the examples of Schetky in Table III columns 7 and 8, wherein said examples encompass: 8.4-12% Mo, 2.3-3.7% Al, 0-1.8% Cr, 0-1.8% V, 0-3.8% Nb. Schetky teaches cold working a wire up to 20% reduction (column 12 line 60). Overlapping ranges have been held to be a prima facie case of obviousness,

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see MPEP § 2144.05. It would have been obvious to one of ordinary skill in the art to select any portion of the range, including the claimed range, from the broader range disclosed in the prior art, because the prior art finds that said composition in the entire disclosed range has a suitable utility. See also *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985).

Concerning the process limitations of dependent claims 39-45, Schetky teaches cold working a wire up to 20% reduction, further heat treatment including solution heat treating 780-880°C (column 12 line 60), and aging at 200-400°C (column 11 lines 18) for 0.1-10,000 min (see Fig. 7), which overlaps the presently claimed heat treatment time and temperatures. Said solution heat treatment temperature taught by Schetky overlaps heating above the beta transus. Though Schetky does not teach a product produced by solution heating below the beta transus, the temperature range of solution heating given by Schetky overlaps the solution heat treatment range given in the instant specification typical of below the transus temperature (see [0056]). Concerning claim 42, Schetky does not specify said alloy product is further cooled in air. However, because the limitation of “cooled in air” is held to be met by the alloy of Schetky exposed to air and decreasing in temperature (wherein said decrease includes very minimal changes, such as 0.1°C), it is held to be within the scope of Schetky to further cool in air, substantially as presently claimed.

Concerning claims 3-7, 48, 49, because Schetky teaches a substantially overlapping alloy composition, processed in a substantially similar method, then substantially the same properties, such as elastic recovery are expected to be present. Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or

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substantially identical processes, a prima facie case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). “When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not.” *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. The prima facie case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product. *In re Best*, 562 F.2d at 1255, 195 USPQ at 433. See also *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985), see MPEP 2112.01.

Concerning claims 8, 24, 34, 35, 47, Schetky teaches said alloy has a beta phase (abstract), has linear elastic properties (column 4 line 16), and has pseudoelastic properties (column 3 line 14) and superelastic properties (column 3 lines 27-28), and has a martensitic structure (abstract).

Concerning claims 9-15, 27, 28, 38, 50, 51, and 52, which mention said Ti-Mo-Al alloy is in the form of a medical device, Schetky teaches said alloy has excellent biocompatibility and is useful for a variety of medical uses, including: orthodontic arch wires, a stent, catheter, dental implants, bone staples, eyeglass frames (column 3 lines 22-27). Though Schetky does not specify forming said alloy into a file or drill for dental applications, because of the excellent biocompatibility of the Ti-Mo-Al alloy taught by Schetky, it is held to be useful for a variety of medical and dental purposes, such as a file or drill.

Concerning claims 11-12, 17, 20, 22-23, 31-33, which mention said Ti-Mo-Al alloy is

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welded, Schetky teaches said alloy exhibits superior weldability (column 2 line 59, column 5 line 15).

Concerning claim 46, Schetky teaches said alloy is formed into a wire, for example, 0.4 mm in diameter (column 9 lines 15-16).

3. Claims 16-21, 29-31, and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schetky as applied to claims above, and further in view of Aizawa et al (US 5,658,207).

Schetky does not mention said Ti-Mo-Al alloy is formed into a portion of a golf club. However, Aizawa teaches that titanium alloys can be formed into golf club heads (column 1 line 10), and wherein said golf club head can be secured by welding or press fitting (column 6 lines 54-55). It would have been obvious to one of ordinary skill in the art to form the Ti alloy taught by Schetky into a golf club head taught by Aizawa, because Schetky teaches said alloy has excellent tensile strength properties (column 9 line 20).

4. Claims 25 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schetky as applied to claims above, and further in view of Davidson (US 6,238,491).

Schetky does not teach the application of a polymer coating to the instant Ti-Mo-Al alloy. However, Davidson teaches that similar Ti alloys used for medical implants can be coated in order to further improve biocompatibility, wherein said coating can be a polymer (column 13 lines 40-46). It would have been obvious to one of ordinary skill in the art to coat the Ti-Mo-Al alloy medical device taught by Schetky with a polymer coating as taught by Davidson, because Davidson teaches said coating improves biocompatibility (column 14 lines 40-46).

***Response to Arguments/Amendments***

5. In the response filed on September 13, 2006 applicant amended claims 1, 26, 37, cancelled claim 2, and submitted various arguments traversing the rejections of record. The examiner agrees that no new matter has been added.

6. Applicant's argument that the present invention is allowable over the prior art of record because Schetky does not teach examples within the claimed ranges/Schetky teaches against the present invention has not been found persuasive. It is unclear applicant has overcome the prior art's deficiencies. Patents are relevant as prior art for all they contain, and nonpreferred embodiments constitute prior art, MPEP 2123. Disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments. In re Susi, 440 F.2d 442, 169 USPQ 423 (CCPA 1971). "A known or obvious composition does not become patentable simply because it has been described as somewhat inferior to some other product for the same use." In re Gurley, 27 F.3d 551, 554, 31 USPQ2d 1130, 1132 (Fed. Cir. 1994).

Though Schetky teaches preferred embodiments with an amount of Mo that is higher than the maximum of 9.75% Mo, Schetky also teaches examples with Mo contents within the instant range can still exhibit beneficial elastic spring back and a small amount of shape memory recovery (Table III). Though Schetky teaches the elastic spring back for alloys with lower Mo is expected to be less than the elastic spring back for alloys with higher, *it is unclear how/if Applicant's alloy exhibits unexpected results with respect to the lower Mo alloys taught by the prior art.*

7. Applicant's argument that the present invention is allowable over the prior art of record

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because Schetky teaches high amounts of Mo are needed for pseudo-elastic strain recovery has not been found persuasive. Instant claims 3, 4, 24, 48, 49, are drawn to elastic recovery properties, and Schetky teaches numerous examples with high elastic recovery, including Alloys #27 (9.5% Mo), 28 (10.0% Mo) and 36 (8.4% Mo) in table III.

Applicant has not clearly shown specific unexpected results with respect to the overlapping composition taught by the prior art or criticality of the instant claimed range- such as unexpected strain recovery or shape memory recovery, etc. (wherein said results must be fully commensurate in scope with the instantly claimed ranges, see MPEP 716.02 d).

### ***Double Patenting***

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

9. Claims 1, 3-53 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-39 of copending Application No. 10/609003. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of US'003 are also drawn to a composition with 8-10% Mo, 2.8-6% Al, up to 2% V, up to 4% Nb, balance Ti; wherein said alloy exhibits an elastic recovery substantially as presently claimed (see US'003 at claims 3-10),



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is produced by solution heating, cold working, cooling in air, aging 350-550°C (US'003 at cl. 2, 11, 12).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

10. Claims 1, 3-53 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-49 of copending Application No. 10/755034. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of US'034 are drawn to an overlapping alloy composition with 8-10% Mo, 2.8-6% Al, up to 2% V, up to 4% Nb, balance Ti (US'034 at cl. 4), wherein said alloy exhibits an elastic recovery substantially as presently claimed (see US'034 at claims 10-23), is produced an identical process of solution heating, cold working, cooling in air, aging 350-550°C (US'003 at cl. 6, 17, 31).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

11. Claims 1, 3-53 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 15-20, 23, 24 of copending Application No. 10/869359. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of US'359 are drawn to an overlapping alloy composition with 8-10% Mo, 2.8-6% Al, up to 2% V, up to 4% Nb, balance Ti (US'359 at cl. 17), wherein said alloy is held to inherently exhibit an elastic recovery substantially as presently claimed, and said alloy product is produced a process of heat treating and cold working (US'359 at cl. 15, 18).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

12. Claims 1, 3-53 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6, 8-55 of copending Application No. 10/755085. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of US'085 are drawn to an overlapping alloy composition with 8-10% Mo, 2.8-6% Al, up to 2% V, up to 4% Nb, balance Ti (US'085 at cl. 3), wherein said alloy exhibits an elastic recovery substantially as presently claimed (see US'085 at claims 5-10), is produced an identical process of solution heating, cold working, cooling in air, aging 350-550°C (US'085 at cl. 4, 45).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

### ***Conclusion***

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janelle Combs-Morillo whose telephone number is (571) 272-1240. The examiner can normally be reached on 8:30 am- 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JCM  
November 22, 2006

ROY KING  
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